

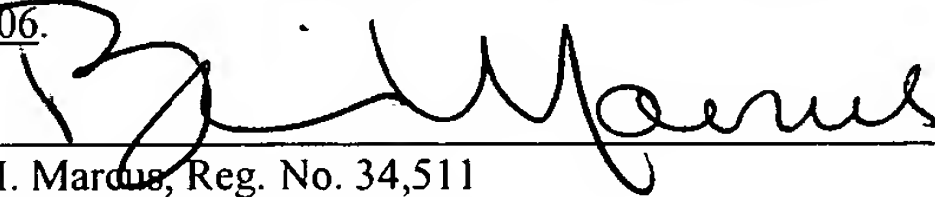


1FW

In re Application	)	<u>PATENT APPLICATION</u>
	)	
Inventors: Jung W. Lee	)	
	)	Art Unit: 3747
Application No.: 10/627,455	)	
	)	Examiner: Harris, K.
Filed Date: July 25, 2003	)	
	)	
Title: SPHERICAL ROTARY ENGINE	)	Customer No.: 28554
VALVE ASSEMBLY	)	
	)	

**CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8**

I hereby certify that this correspondence is being deposited in the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on January 11, 2006.

 (Attorney Signature)  
Brian I. Marcus, Reg. No. 34,511  
Signature Date: January 11, 2006

**REQUEST FOR WITHDRAWAL OF ABANDONMENT**

Commissioner of Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sirs:

This transmittal is in reply to the Notice of Abandonment mailed on December 29, 2005. The Notice of Abandonment alleges that the U.S. Patent Office did not receive a Response to the Office Action mailed on June 16, 2005. However, a Response to the Office Action was timely mailed on December 16, 2005, as evidenced by copies of the following documents:

- Transmittal Form;
- Fee Transmittal;
- Petition for Extension of Time;
- Credit Card Payment Form;
- Response to Office Action; and
- Postcard stamped received on December 19, 2005 by the OIPE.

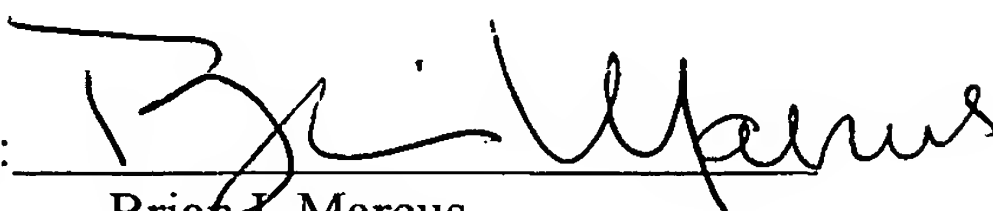
The Commissioner is authorized to charge any underpayment to Deposit Account No. 501826 for any matter in connection with this transmittal which may be required.

Should any further questions remain, the Examiner is invited to contact the undersigned attorney.

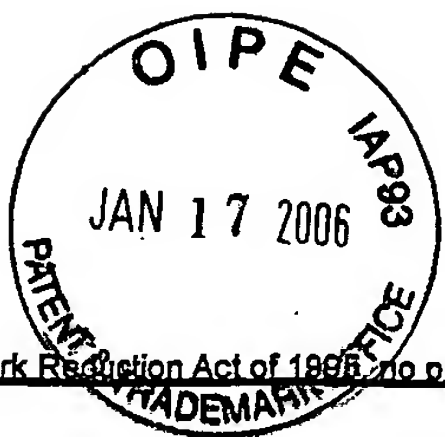
Respectfully submitted,

Date: January 11, 2006

By: \_\_\_\_\_

  
Brian I. Marcus  
Reg. No. 34,511

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PTO/SB/21 (09-04)

Approved for use through 07/31/2006. OMB 0651-0031  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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**TRANSMITTAL  
FORM**

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	10/627,455
Filing Date	July 25, 2003
First Named Inventor	Lee
Art Unit	3747
Examiner Name	Harris, K.
Attorney Docket Number	JWLE-01000US0

**ENCLOSURES** (Check all that apply)

- |  |  |  |
|--|--|--|
| <input checked="" type="checkbox"/> Fee Transmittal Form<br><input checked="" type="checkbox"/> Fee Attached<br><input checked="" type="checkbox"/> Amendment/Reply<br><input type="checkbox"/> After Final<br><input type="checkbox"/> Affidavits/declaration(s)<br><input checked="" type="checkbox"/> Extension of Time Request<br><input type="checkbox"/> Express Abandonment Request<br><input type="checkbox"/> Information Disclosure Statement<br><br><input type="checkbox"/> Certified Copy of Priority Document(s)<br><input type="checkbox"/> Reply to Missing Parts/<br>Incomplete Application<br><input type="checkbox"/> Reply to Missing Parts<br>under 37 CFR 1.52 or 1.53 | <input type="checkbox"/> Drawing(s)<br><input type="checkbox"/> Licensing-related Papers<br><br><input type="checkbox"/> Petition<br><input type="checkbox"/> Petition to Convert to a<br>Provisional Application<br><input type="checkbox"/> Power of Attorney, Revocation<br>Change of Correspondence Address<br><input type="checkbox"/> Terminal Disclaimer<br><input type="checkbox"/> Request for Refund<br><input type="checkbox"/> CD, Number of CD(s) _____<br><input type="checkbox"/> Landscape Table on CD | <input type="checkbox"/> After Allowance Communication to TC<br><input type="checkbox"/> Appeal Communication to Board<br>of Appeals and Interferences<br><input type="checkbox"/> Appeal Communication to TC<br>(Appeal Notice, Brief, Reply Brief)<br><input type="checkbox"/> Proprietary Information<br><input type="checkbox"/> Status Letter<br><input checked="" type="checkbox"/> Other Enclosure(s) (please identify<br>below):<br>Postcard |
|--|--|--|

Remarks

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

Firm Name	Brian I. Marcus, Esq., Vierra Magen Marcus Harmon & DeNiro LLP		
Signature			
Printed name	Brian I. Marcus		
Date	December 16, 2005	Reg. No.	34,511

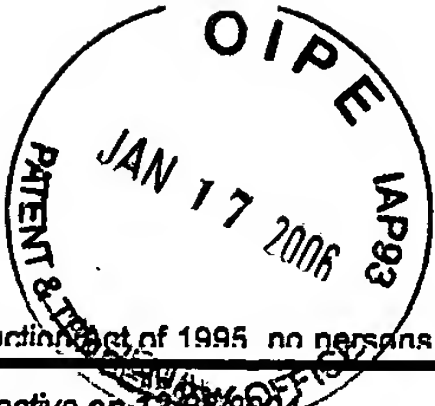
**CERTIFICATE OF TRANSMISSION/MAILING**

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature			
Typed or printed name	Brian I. Marcus	Date	December 16, 2005

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PTO/SB/17 (12-04)

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Effective on 12/08/2004

Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

# FEE TRANSMITTAL

## For FY 2005

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ 510.00

**Complete if Known**

Application Number	10/627,455
Filing Date	July 25, 2003
First Named Inventor	Lee
Examiner Name	Harris, K.
Art Unit	3747
Attorney Docket No.	JWLE-01000US0

**METHOD OF PAYMENT** (check all that apply)

☐ Check ☒ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): \_\_\_\_\_

☒ Deposit Account Deposit Account Number: 501826 Deposit Account Name: Vierra Magen Marcus Harmon & DeNiro LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee

☒ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

**FEE CALCULATION****1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

**2. EXCESS CLAIM FEES**

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

**Total Claims**      **Extra Claims**      **Fee (\$)**      **Fee Paid (\$)**      **Multiple Dependent Claims**

\_\_\_\_\_ - 20 or HP = \_\_\_\_\_ x \_\_\_\_\_ = 0      **Fee (\$)**      **Fee Paid (\$)**

HP = highest number of total claims paid for, if greater than 20

**Indep. Claims**      **Extra Claims**      **Fee (\$)**      **Fee Paid (\$)**

\_\_\_\_\_ - 3 or HP = \_\_\_\_\_ x \_\_\_\_\_ = 0

HP = highest number of independent claims paid for, if greater than 3

**3. APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

**Total Sheets**      **Extra Sheets**      **Number of each additional 50 or fraction thereof**      **Fee (\$)**      **Fee Paid (\$)**

\_\_\_\_\_ - 100 = \_\_\_\_\_ / 50 = \_\_\_\_\_ (round up to a whole number) x \_\_\_\_\_ = 0

**4. OTHER FEE(S)**

Non-English Specification, \$130 fee (no small entity discount)

Other: 3 mo. extension of time

510.00

**SUBMITTED BY**

Signature		Registration No. (Attorney/Agent) 34,511	Telephone 415-369-9660
Name (Print/Type)	Brian T. Marcus	Date December 16, 2005	

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

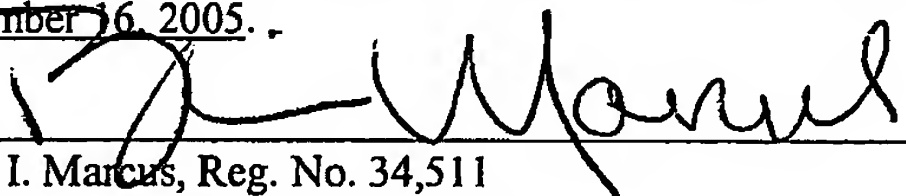


UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application	)	<u>PATENT APPLICATION</u>
Inventors: Jung W. Lee	)	
Application No.: 10/627,455	)	Art Unit: 3747
Filed Date: July 25, 2003	)	Examiner: Harris, K.
Title: SPHERICAL ROTARY ENGINE VALVE ASSEMBLY	)	Customer No.: 28554

**CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8**

I hereby certify that this correspondence is being deposited in the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on December 16, 2005.

  
Brian I. Marcus, Reg. No. 34,511  
Signature Date: December 16, 2005

(Attorney Signature)

RESPONSE B TO OFFICE ACTION UNDER 37 C.F.R. §1.111

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This RESPONSE B is in reply to the Office Action mailed June 16, 2005.

AMENDMENTS to the CLAIMS begin on Page *Kobayashi* of this RESPONSE.

REMARKS begin on Page *Kobayashi* of this RESPONSE.

### Amendments To The Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (previously presented) A spherical rotary engine valve assembly for a combustion cylinder in an internal combustion engine, comprising:
  - a valve mounted for rotation and having a spherical shape with an opening formed within an outer surface of the valve, the opening having a shaped surface including a convex portion and a concave portion;
  - a seal having a first and second rings for sealing an interface between said valve and the combustion chamber, a force exerted on a portion of said first ring causing a force between said second ring and said valve outer surface; and
  - a contoured piston head formed on a piston operating within the combustion chamber, said contoured piston head having a first concave section generally conforming to a shape of said valve, and a second concave section having a deeper recess than said first concave section.
2. (previously presented) A spherical rotary engine valve assembly as recited in claim 1, further comprising a valve housing positioned adjacent said valve on a side of said valve generally opposite from the cylinder, a gap being defined between said valve and said valve housing, said valve housing including a trench for preventing a flow of gas in a direction within said gap.
3. (previously presented) A rotary engine valve, comprising:
  - a spherical surface over a majority of said rotary engine valve, said spherical surface capable of substantially sealing the opening to the combustion chamber against fluid flow into or out of the combustion chamber as the spherical surface is positioned over the combustion chamber during rotation of the rotary engine valve; and
  - a shaped section having a surface with a different curvature than said spherical surface, the shaped section including a leading edge and a trailing edge, the leading edge capable of opening to the intake manifold and the combustion chamber before the trailing edge during rotation of the rotary engine valve, said shaped section capable of allowing fluid flow from the intake manifold into the combustion chamber when the leading edge of the



shaped section rotates past the intake manifold, portions of the shaped section adjacent the leading edge having a concave shape for enhancing initial volumetric fluid flow from the intake manifold into the combustion chamber as the leading edge rotates past the intake manifold.

4. (previously presented) A rotary engine valve as recited in claim 7, the rotary engine valve further capable of allowing fluid flow from the combustion chamber to an exhaust manifold, the shaped section capable of allowing fluid flow from the combustion chamber to the exhaust manifold when the leading edge of shaped section rotates past the combustion chamber, the concave shape of the portions of the shaped section adjacent the leading edge capable of enhancing initial volumetric fluid flow from the combustion chamber into the exhaust manifold as the leading edge rotates past the combustion chamber.
5. (previously presented) A rotary engine valve as recited in claim 7, the trailing edge of the shaped section compressing the fluid in the combustion chamber as the trailing edge rotates past the combustion chamber.
6. (previously presented) A rotary engine valve as recited in claim 7, the shaped section getting narrower from the leading edge to the trailing edge for promoting turbulent flow of the fluid entering the combustion chamber.
7. (previously presented) A rotary engine valve assembly, comprising:
  - a rotary engine valve rotating about a reference axis, the rotary engine valve capable of sealing an opening to a combustion chamber, and the rotary engine valve capable of allowing fluid flow from an intake manifold into the combustion chamber, the rotary engine valve including:
    - a spherical surface over a majority of said rotary engine valve, said spherical surface capable of substantially sealing the opening to the combustion chamber against fluid flow into or out of the combustion chamber as the spherical surface is positioned over the combustion chamber during rotation of the rotary engine valve, and

a shaped section having a surface with a different curvature than said spherical surface, the shaped section including a leading edge and a trailing edge, the leading edge capable of opening to the intake manifold and the combustion chamber before the trailing edge during rotation of the rotary engine valve, portions of the shaped section adjacent the leading edge having a concave shape for enhancing initial volumetric fluid flow from the intake manifold into the combustion chamber as the leading edge rotates past the intake manifold.

8. (previously presented) A rotary engine valve assembly as recited in claim 7, the rotary engine valve further capable of allowing fluid flow from the combustion chamber to an exhaust manifold, the concave shape of the portions of the shaped section adjacent the leading edge capable of enhancing initial volumetric fluid flow from the combustion chamber into the exhaust manifold as the leading edge rotates past the combustion chamber.
9. (previously presented) A rotary engine valve assembly as recited in claim 8, further comprising a valve housing generally surrounding the rotary engine valve, a gap being defined between the valve housing and the rotary engine valve, the valve housing including a trench for preventing a flow of fluid within the gap between the exhaust manifold and the combustion chamber.
10. (previously presented) A rotary engine valve assembly as recited in claim 7, the trailing edge of the shaped section compressing the fluid in the combustion chamber as the trailing edge rotates past the combustion chamber.
11. (previously presented) A rotary engine valve assembly as recited in claim 7, further comprising a piston head on a piston reciprocating within the combustion chamber, the piston head including a first concave area generally matching the curvature of the spherical section, and a second concave area having a greater concavity than the first concave area.
12. (previously presented) A rotary engine valve assembly as recited in claim 7, further comprising a seal having a first and second rings for sealing an opening between said spherical portion of the rotary engine valve and the combustion chamber, a force exerted on a



portion of said first ring causing a force between said second ring and the spherical portion of the rotary engine valve.

13. (previously presented) A rotary engine valve assembly as recited in claim 7, further comprising an air runner within the intake manifold, the air runner capable of directing fluid to the portions of the shaped section adjacent the leading edge after the leading edge passes by the air runner.

### REMARKS

The above Amendments and these Remarks are in reply to the Office Action mailed June 16, 2005. Claims 1-13 are presented herewith for consideration.

Currently, claims 1 – 13 are pending. Applicants respectfully request reconsideration of claims 1-13.

#### I. Rejection of Claims 1-13 Under 35 U.S.C. 103(a)

Claims 1 – 13 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,415,756 to Lee ("*Lee*") in view of U.S. Patent No. 6,651,612 to Kobayashi ("*Kobayashi*").

Applicant notes that *Kobayashi* has an earliest effective 102(e) priority date of August 7, 2002. The filing date of the foreign priority document may not be used as the effective filing date of the reference for 102(e) priority purposes. The present application claims priority under 35 U.S.C. §119(e) to a provisional application having a filing date of July 25, 2002.

Therefore, the present application has an earliest effective filing date prior to that of *Kobayashi*, and accordingly, *Kobayashi* is not prior art with respect to the present invention.

Moreover, even if *Kobayashi* were considered against the claims of the present application, applicant respectfully disagrees with the Examiner's characterization of the disclosure of *Kobayashi*. The Examiner has merely repeated the claim elements relating to the piston head supposedly found in *Kobayashi*, without in fact pointing specifically where in *Kobayashi* the recited claim elements are found. In fact, *Kobayashi* nowhere discloses, teaches or suggests:

a contoured piston head ... having a first concave section generally conforming to a shape of said valve, and a second concave section having a deeper recess than said first concave section.

*Kobayashi* does not disclose or suggest a first concave section generally conforming to a shape of the valve, and *Kobayashi* does not disclose or suggest a second concave section having a deeper recess than the first concave section.

Without such a disclosure, the combination of *Lee* and *Kobayashi* does not teach or suggest the claimed invention, even if *Kobayashi* were considered prior art against the present invention.

Based on the above amendments and these remarks, reconsideration of Claims 1-13 is respectfully requested.

The Examiner's prompt attention to this matter is greatly appreciated. Should further questions remain, the Examiner is invited to contact the undersigned attorney by telephone.

Enclosed is a PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. § 1.136 for extending the time to respond up to and including today, December 16, 2005.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 501826 for any matter in connection with this response, including any fee for extension of time, which may be required.

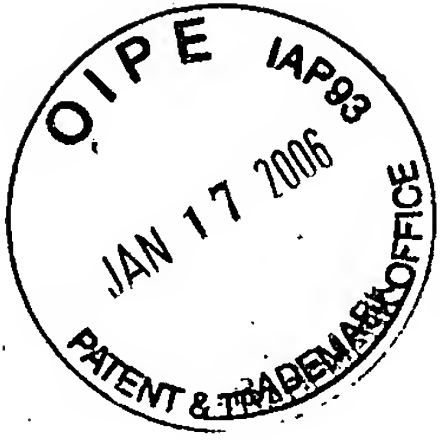
Respectfully submitted,

Date: December 16, 2005

By: 

Brian I. Marcus  
Reg. No. 34,511

VIERRA MAGEN MARCUS HARMON & DENIRO LLP  
685 Market Street, Suite 540  
San Francisco, CA 94105-4206  
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Facsimile: (415) 369-9665



The United States Patent and Trademark Office  
date stamp sets forth the date of receipt of:

Applicant: Jung W. Lee  
Appl. No.: 10/627,455  
Filing Date: July 25, 2003  
Title: SPHERICAL ROTARY VALVE ENGINE ASSEMBLY

Enclosed:

1. Transmittal Form
2. Fee Transmittal
3. Petition for Extension of Time
4. Credit Card Payment Form
5. Response to Office Action
6. Certificate of Mailing



Attorney Docket No.: JWLE-01000US0 Attorney: Brian I. Marcus  
Mailing Date: December 16, 2005

**Vierra Magen Marcus Harmon & DeNiro**  
File: JWLE-01000US0  
A: \_\_\_\_\_  
Due Date: \_\_\_\_\_  
Final Due Date: \_\_\_\_\_  
Atty: Jim Dkt: JP Verify JM